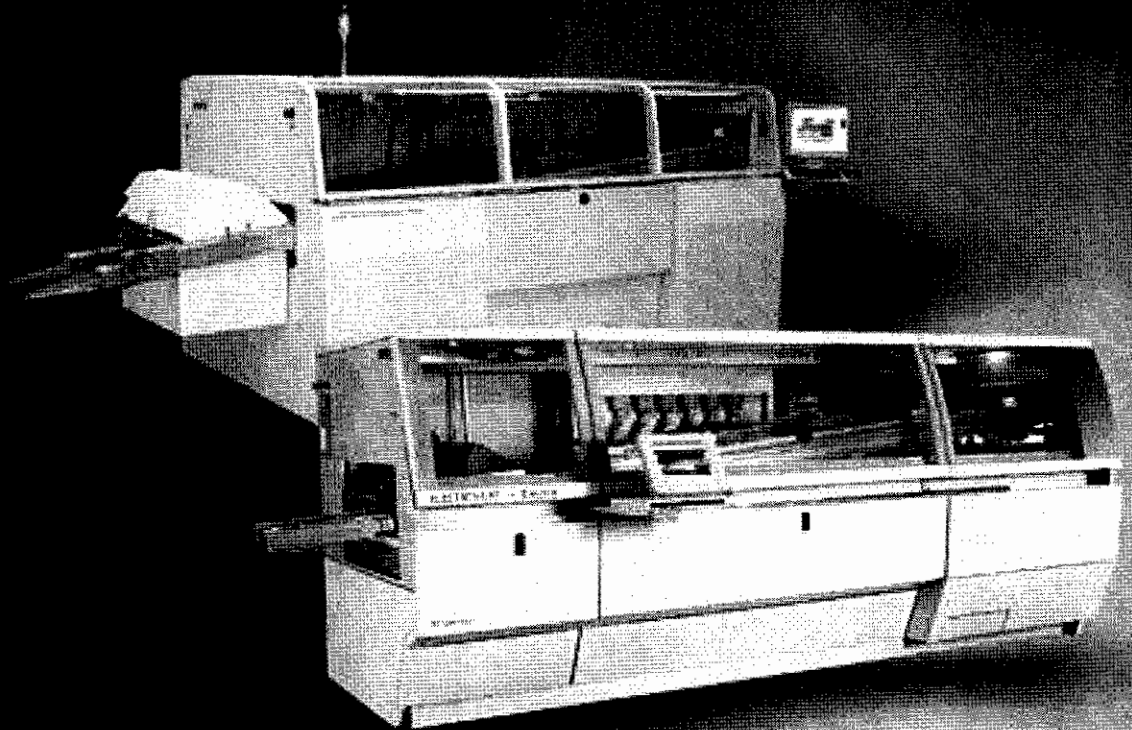**<u>EXHIBIT C</u>**

Speedline brings you

proven, lead-free

processing performance in

two world-class solutions:

Electra for high-volume

manufacturers, and

VectraElite for medium-to-

high-volume production.

Electrovert®

Electra® and VectraElite™
Wave Soldering Systems

Electrovert

Electra

The proven performance of the Electra has provided the electronics assembly industry with world-class soldering results. The Electra system is designed with computer-based, closed-loop controls that deliver the required accuracy and repeatability for demanding production environments. The intuitive operator interface provides easy recipe set-up in the Windows® operating system. The Electra is an advanced, highly engineered wave soldering system designed for high-volume manufacturers while also providing maximum process flexibility.
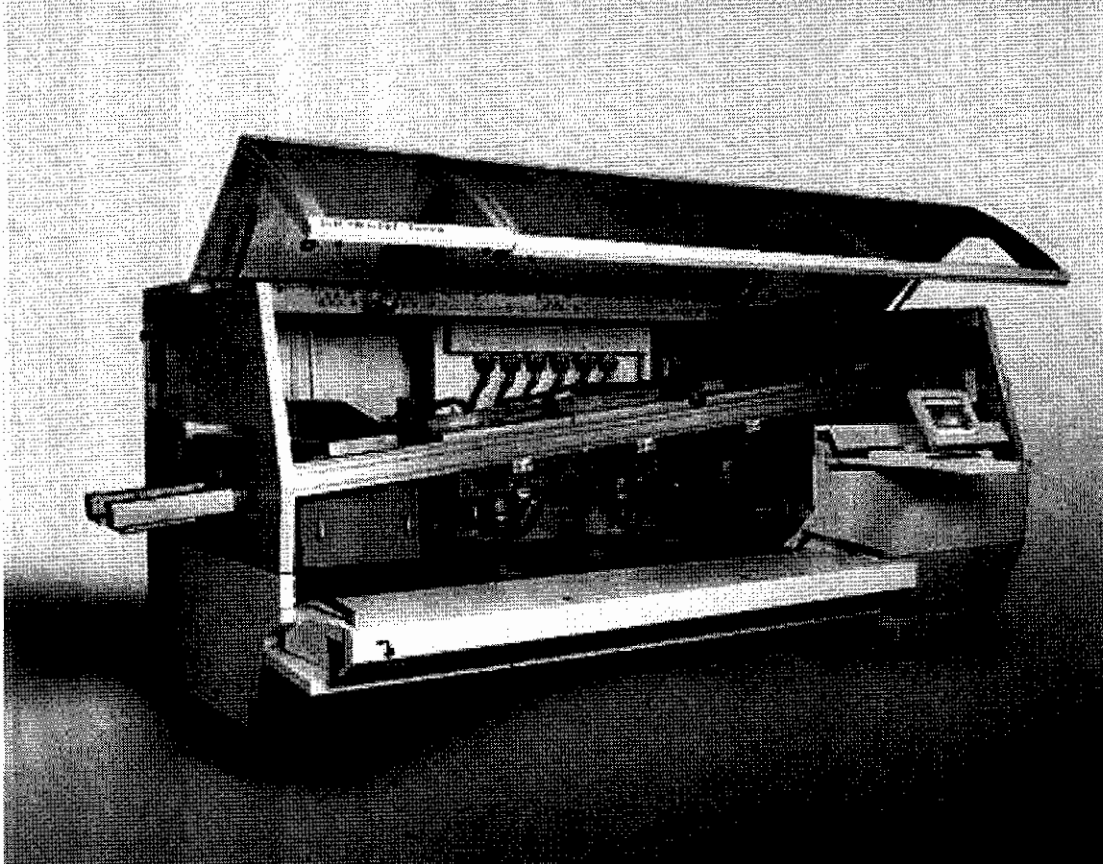

Proven Performance, World-Class Results

The Electra comes with 6 feet of bottom-side preheat (8 feet optional). The system has the capability to perform dual fluxing applications with 6 feet of preheat. Lift up hoods and a fold-down tailgate provide full front access to the machine for easy maintenance. The rear of the system has several access doors that open to expose the electrical panels, fluxer, flux tank and solder pot. All major modules are on slides for easy maintenance. A sliding operator console and step platform are integrated into the system for easy viewing and operation of the soldering process.

The Electra is designed to support lead-free applications. The solder pot and its components are resistant to highly corrosive, lead-free solders, and a quick-change pot is available for easy changeover to lead-free. Speedline's combination of industry-leading products and exceptional process knowledge helps customers transition to lead-free processing efficiently and cost-effectively.
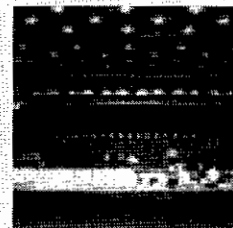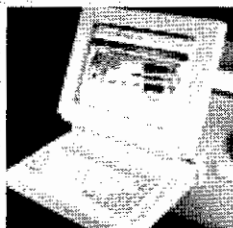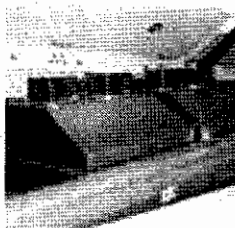
VectraElite

## Zero-Defect Process at the Lowest Cost of Ownership

The VectraElite system comes standard with 4 feet of preheat. Preheat capability is increased to 6 feet with a self-contained external fluxer cabinet. Exceptional access is provided to all areas of the system. Lift-up hoods, a fold down pneumatic panel, and swing out corner panels provide unobstructed access to the front of the system. The rear of the system has several access doors that open to expose the electrical panels, fluxer, flux tank, and solder pot. All major components slide out for easy maintenance. Like the Electra, the VectraElite is also designed to handle lead-free applications. The solder module and its components are resistant to lead-free solders, and the quick-change solder pot option is available.
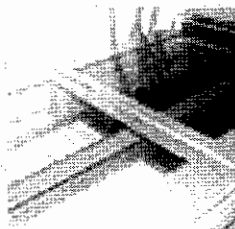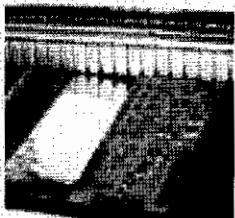
The VectraElite system is the wave soldering solution for medium-to-high-volume production that requires fast changeover, process flexibility, and system reliability. The Vectra-Elite combines innovative technology in an accessible, ergonomic platform and provides the tools necessary to achieve a zero-defect process at the lowest possible cost of ownership.
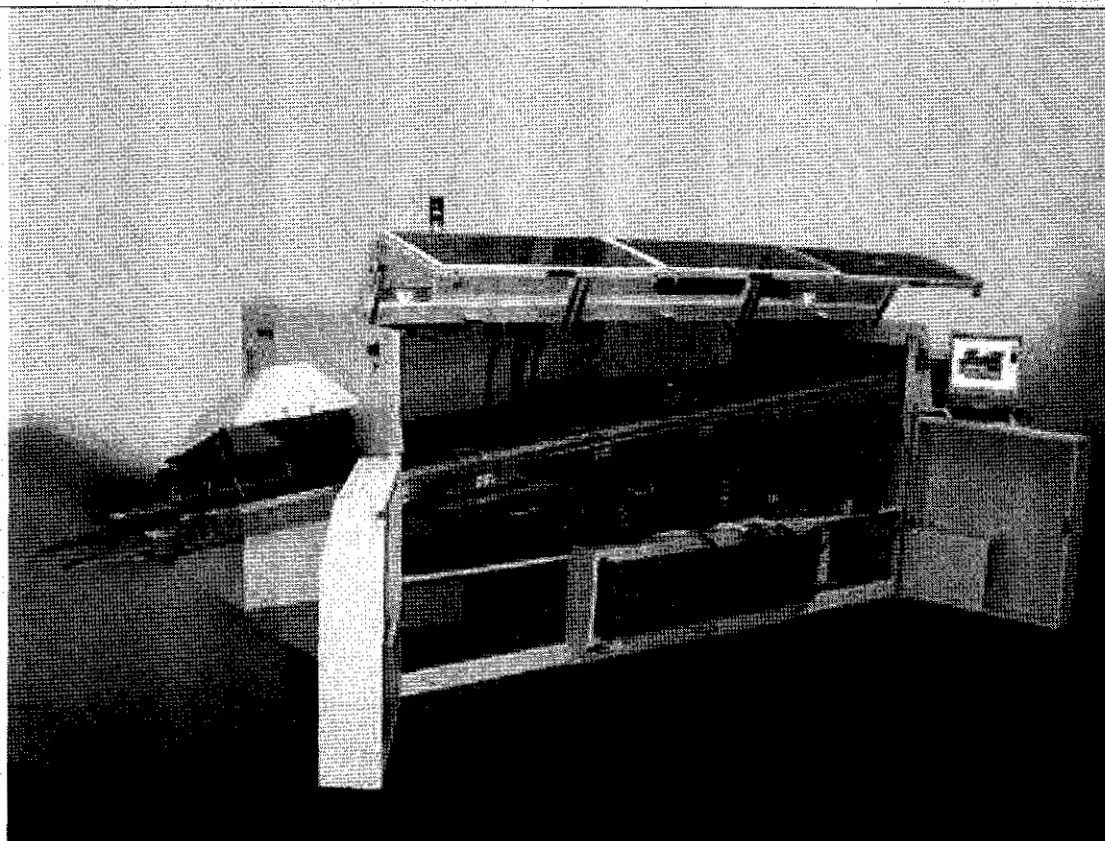
As the electronics industry moves towards lead-free implementation, consideration must be given to the equipment's ability to operate effectively in lead-free environments. Speedline Technologies provides not only equipment designed for lead-free applications, but also the process knowledge to assist in the transition to lead-free.
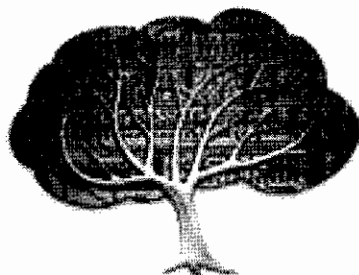
Lead-Free Process Ready

At Electrovert, our Electra and VectraElite wave soldering systems have been designed to handle lead-free applications for many years. The cast iron solder pot and its components are resistant to the corrosive nature of lead-free solders and are capable of withstanding temperatures of 315°C (600°F). All stainless steel components that come into contact with the solder are composed of ElectroCoat corrosion-resistive surface conversion as a standard feature, or titanium as an option.

Quick Change Solder Pot

Quick-Change Solder Pot

- Allows for easy changeover between tin/lead and lead free alloys
- Inserted in a cart on rollers making it simple to move the pot to and from a storage location
- Available as an option on the Electra and VectraElite

HVC Topside Preheat

HVC (High-Velocity Convection) Topside Preheat

- Finned medium mass heater with dual variable speed convection fans
- Provides even topside preheating to boards
- Ability to obtain tighter Δ T's across the board as required by narrower process windows

UltraFill Nozzle

UltraFill™ Nozzle

- Minimizes temperature drop between the chip and main wave
- Promotes hole fill and bridge reduction for lead-free applications due to longer dwell time
- Available for nitrogen or air operation
- Easy changeover from air to nitrogen operation
- Lift-up cover provides access for easy maintenance
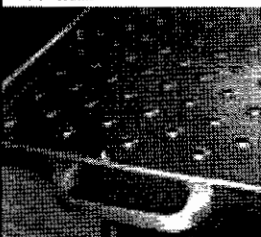- Dross generation reduced by up to 50%

Nitrogen Hood

Nitrogen Hood

- Nitrogen enclosure for lead-free wave soldering
- Aids in dross reduction
- Utilizes a wet seal to isolate oxygen from the solder interface
- Provides the benefits of nitrogen soldering without fluctuations inherent in nitrogen tunnels

PWC Module

PWC (Post Wave Cooling)

- Promotes accelerated cooling as the board exits the wave - reduces board exit temperatures
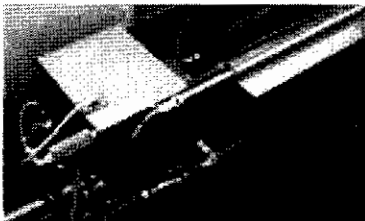- Aids in reducing fillet lifting associated with lead-free alloys

Lead-Free Processing

- Fluxer module designed to support VOC free fluxes
- Vectaheat convection preheaters provide even cross-board temperatures as well as efficient drying of water based VOC-free fluxes
- Solder module offers optimal configuration for your lead-free process

Both the Electra and VectraElite are configured with a Windows® operating system that provides pull-down menus for data-logging and barcode capability. The capability of networking to other computers allows downloading of recipes and remote access to operating data.

Windows Operating System

Features

- Process notes function allows the operator to gain work and process instructions tied to the recipes via a link to a data storage server
- Data logging traceability feature provides the capability to select important parameters, either board-based or time based
- Security password protection allows only authorized personnel to make changes to recipes
- The Electra operator interface allows the operator to enter setup parameters while viewing what is happening by sliding the control station along the front of the machine

Slide-Out Fluxer Module

A number of fluxers are available on the Electra and VectraElite that feature foam and spray application methods. The fluxer module consists of a slide-out drawer mounted inside the fluxer cradle for easy maintenance. This allows for a high degree of interchangeability, providing quick conversion from one type of fluxer to another. An onboard storage area for flux tanks pivots out with the rear access door. The internal exhaust design segregates flux fumes from the rest of the machine.

Ultra-Spray Technology

Optima™

- Combines Ultra-Spray* technology and Smart Motion traversing mechanism
- Significantly reduces material costs and increases yields
- Optional inline selective fluxing capability and dual-flux supply

Performa™

- Uses Ultra Spray technology, a motor-driven traversing mechanism, and state-of-the-art self-tuning ultrasonics
- Minimal maintenance requirements
- Ensures a uniform coating of flux
- Complete through-hole penetration

*ServoJet*   *Flux Jetting Technology*

ServoJet™

- Servo-controlled reciprocating spray fluxing system ensures complete flux penetration through flux jetting technology and concentric air atomization
- Accurate flux control reduces bridging and flux usage
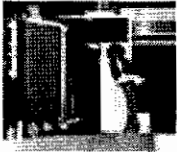- Advanced area specific programmable selective fluxing capability

ServoSpray

ServoSpray™

- Servo-controlled reciprocating spray fluxing system
- Features air atomized spray technology
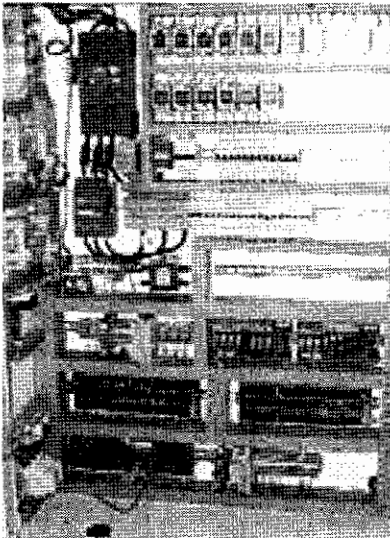- Economical spray fluxing solution

Conveyor System
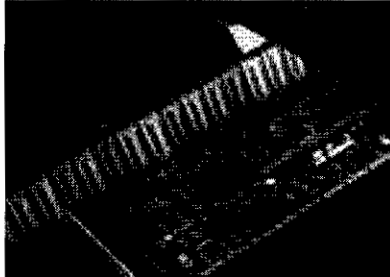
Finger Cleaner

Vectaheat Preheater

Electrical Panel Accessability

Electra Step Platform

A robust finger conveyor with computer-controlled adjustable width from 2" to 18" (50 mm to 457 mm) on the VectraElite and 20" (508 mm) on the Electra [24" (609 mm) optional] supports various finger configurations. All fingers are composed of titanium, such as the standard, flexible V groove fingers that allow the user to spring-load the boards, and the robust, rigid fingers for larger, heavy boards. The fingers can also be configured as a V and L groove intermix for running a combination of pallets and boards. Other features include a finger cleaner with low liquid level alarm (optional on the VectraElite), AC drive motor, load guides, and adjustable incline from 5-7°. Also available with a pallet-type conveyor.

The preheat section, ranging from 4 to 6 feet on the VectraElite and 6 to 8 feet on the Electra, ensures sufficient topside temperatures on the most complex assemblies. Infrared panels or Vectaheat forced convection preheaters can be easily interchanged with the convenient slide-out feature and quick-disconnect plugs. Up to three IR or HVC top-side preheaters can augment the bottom configuration. A pyrometer option can be added to provide board temperature monitoring and patented closed-loop feedback control.

Exceptional front access is achieved via lift up hoods, fold down tailgate (Electra), a fold down pneumatic panel and swing out corner panels (VectraElite). The rear of the system has several access doors that open to expose the electrical panels, fluxer, flux tank and solder pot.

- All major components are on slides for easy maintenance
- Return conveyor capability provides automatic return of pallets under the machine
- The Electra includes an integrated step platform for viewing the soldering process
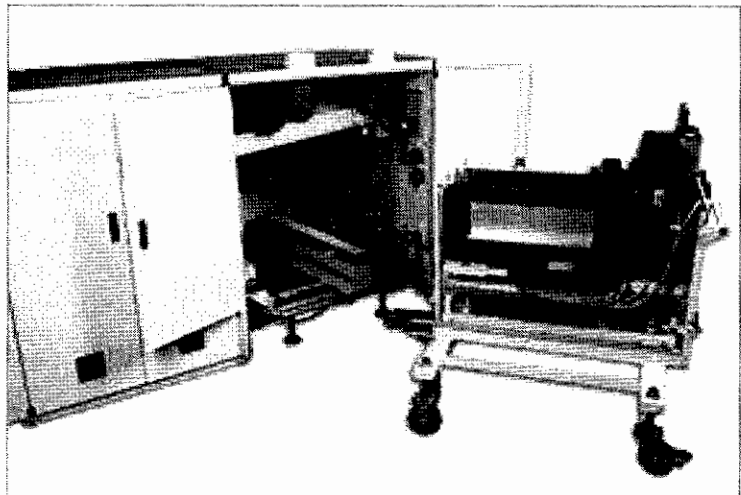
Quick Change Solder Pot

N₂ Controls
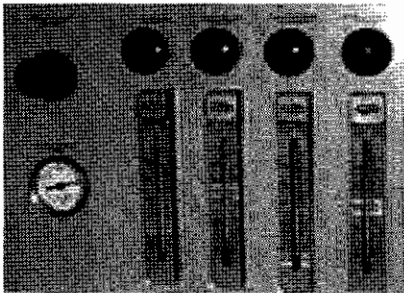
Electrovert's wave soldering systems feature a high capacity cast iron roll-out solder pot and low-maintenance pump with AC motors. A variety of solder nozzles are available that are capable of reducing defects in specific applications. For inert atmosphere soldering, the systems offer the patented coN₂tour inert boundary system, or the coN₂tour PLUS, which incorporates the hot gas knife within the coN₂tour nozzle. The UltraFill nozzle, available for air or nitrogen operation, is designed for process improvements in lead-free soldering. System controls include a 7-day timer, closed-loop temperature and variable wave height adjustment, high/low alarms, auto start/stop of waves, and exhaust interlock. Both systems also include as a standard feature, automatic, recipe driven solder pot height control (auto lead clearance control).

Lambda Wave

Rotary Chip Wave
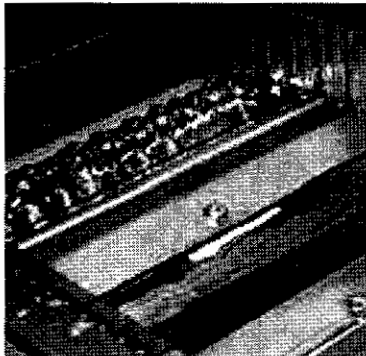
UltraFill with Omega

Rotary Chip
- Rotating auger-type design pushes the solder to provide maximum wetting of components
- Non-clogging design virtually eliminates skips or misses

UltraFill™
- Designed for lead-free soldering
- Easily changeable between nitrogen and air process atmosphere

Lambda™
- Proven unidirectional wave design recommended for air operation
- Controlled solder peel off forms good solder joints and reduces defects

coN₂tour®
- Patented boundary method for inert soldering with low nitrogen consumption
- Offers no throughput limitations and provides excellent visibility of the soldering process

Omega™
- Paddle design that gives a slight agitation to the center of the wave for SMT components
- Aids in hole fill for difficult to-solder boards

Accuknife

Accuknife™
- Patented, proven process that directs a sheet of controlled, heated air over the bottom of a PCB as it exits the solder wave
- Effectively clears the joints of excess molten solder, reducing bridging
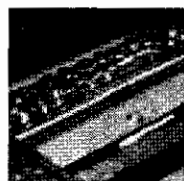
coN₂tour PLUS

coN₂tour PLUS®
- Combines inert boundary soldering of the coN₂tour with the Accuknife
- Inerts only the solder wave, providing the benefits of nitrogen wave soldering without the cost

ExactaWave

ExactaWave™
- Patented method to measure the height of the solder wave relative to the PCB in the conveyor
- Maintains consistent wave height within ± 0.05 mm (0.002") to avoid defects and improve productivity

FEATURE		ELECTRA	VECTRAELITE
Process Width		2" to 20" (50 mm to 508 mm); 2" to 24" (50 mm to 609 mm) optional	2" to 18" (50 mm to 460 mm)
Machine Length		150.5" (3823 mm)	122.7" (3117mm)
Machine Length with External Fluxer		175.5" (4458 mm)	154.5" (3925mm)
Machine Width		64.4" (1636 mm)	61" (1557 mm)
Machine Height		72" (1829 mm)	68" (1727mm)
Fluxer	Maximum # of Fluxers	2	1
	Foam	•	•
	Optima	•	•
	Performa	•	•
	ServoJet	•	•
	ServoSpray	C	
Preheat	Length	6' (1.8 m) with internal fluxer 8' (2.4 m) with external fluxer	4' (1.2 m) with internal fluxer 6' (1.8 m) with external fluxer
	High Velocity Convection (HVC)	•	•
	I/R Preheat	•	•
	Vectaheat	•	•
	Combination mix	•	•
Wave	coN2tour	•	•
	Lambda	•	•
	Rotary chip	•	•
	ExactaWave	•	•
	UltraFill	•	•
	Post Wave Cooling (PWC)	•	•
Debridging	Accuknife	•	•
	conN2tour PLUS	•	•
Conveyor	Automatic Width	S	O
	Finger Cleaner	S	O
Exhaust requirements		Three (3) 6" (150 mm) stacks; each requires 700 cfm @ 1" (25 mm) of H_2O static pressure	Two (2) 8" (208 mm) stacks; each requires 700 cfm @ 1" (25 mm) of H_2O static pressure
Air requirements		60 to 120 psig (415 to 830 kPa)	60 120 psig (415 to 830 kPa)
Nitrogen requirements		0.5" FNPT inlet fitting with 100 to 120 psig (690 to 830 kPa)	0.5" FNPT inlet fitting with 60 to 120 psig (415 to 830 kPa)

• Available; O   Optional; S   Standard; C   Contact Factory

ABOUT SPEEDLINE TECHNOLOGIES

Speedline Technologies is the global leader in process knowledge and expertise for the PCB assembly and semiconductor industries. Based in Franklin, Massachusetts, U.S.A., the company markets five best in class brands — Accel microelectronics cleaning; Camalot dispensing systems; Electrovert wave soldering, reflow soldering, and cleaning equipment; MPM stencil and screen printing systems; and Protect global services, support, and training solutions. For more information, visit us at www.speedlinetech.com.

Speedline Technologies maintains an ongoing program of product improvement that may affect design and/or price. We reserve the right to make these changes without prior notice or liability.

Speedline technologies